

STUDIES OF THE ACARINA FAUNA OF LEAF-LITTER AND MOSS FROM AUSTRALIA

No. 2.—A NEW TRACHYTID MITE, *POLYASPINUS TUBERCULATUS*, FROM QUEENSLAND (ACARINA, TRACHYTINA)

By H. WOMERSLEY, HONORARY ACAROLOGIST, SOUTH AUSTRALIAN
MUSEUM

Fig. 1-2

SYNOPSIS

A third species of the genus *Polyaspinus* Berlese, 1917, *P. tuberculatus* sp.nov., is described from specimens collected from leaf-litter from Brookfield, Queensland. Adults of both sexes as well as the larva, protonymph and tritonymph are known.

In his 1953 paper "A Revision of the Cohort Trachytina Trägårdh 1938, etc.", Dr. J. H. Camin has shown on p. 365 that the family Polyaspinidae erected by Trägårdh in 1941 for *Polyaspinus cylindricus* Berlese 1917 is not justified, and that the genus should be placed in the Trachytidae. It was considered that the characters used by Trägårdh to separate the two families, Trachytidae and Polyaspinidae, were no more significant than those used to separate the four genera included in the other family of Trachytina, the Polyaspidae.

In his key (*loc. cit.* p. 367) to the families and genera of the Trachytina, Camin separates the Trachytidae and Polyaspidae mainly on the presence or absence of small claws on tarsi I. The first of these families, in which claws are present on tarsi I, contains only the genera *Trachytes* Michael 1894, and *Polyaspinus* Berlese 1917 which he separates as follows:—

“Body pyriform; metasternal shields narrow, elongate, flanking genital aperture; epigynial shield trapezoidal; dorsal marginal shields entire; dorsum covered by nymphal skins.

Genus *Trachytes*.

Body oval, pointed anteriorly; metasternal shields usually reduced, rounded, at posterior corners of genital apperture; epigynial shield ovoid, truncate posteriorly; dorsal marginal setae on individual platelets; dorsum with fragments of nymphal skins on shields only.

Genus *Polyaspinus*."

Until 1954 only the genotype of *Polyaspinus*, *P. cylindricus* Berl. 1917 was known but in that year Camin described a second species, *P. higginsi*, from a solitary female specimen collected by Mr. Harold Higgins in Idaho, U.S.A.

More recently, however, the present writer obtained a number of specimens of a Polyaspid mite from a collection of leaf-litter from the corner of Haven Road and Upper Brookfield Road, Brookfield, Queensland, made by Dr. E. H. Derrick. These mites have proved to be a third species of *Polyaspinus*, and are here described and figured as a new species, *Polyaspinus tuberculatus* sp.nov. The larval, protonymphal and tritonymphal stages as well as both sexes were present.

***Polyaspinus tuberculatus* sp. nov.**

Fig. 1, A-H; 2, A-H

Locality: In leaf-litter from the corner of Haven Road and Upper Brookfield Road, Brookfield, Queensland, 20th July, 1960 (coll. E. H. Derrick).

Types: Holotype female, allotype male and morphotypes of larva, protonymph and tritonymph, as well as six paratype males, and one paratype tritonymph in the collection of the South Australian Museum.

Description.

Female holotype: Fig. 1, A-J, 2, A. A strongly sclerotised, deep brownish species with fragments of nymphal skins adhering. Body boat-shaped with vertex a rounded point terminating in a small bifid tubercle, sides curved and posterior truncate with a pair of large broadly conical processes, flattened dorsally with a slightly concave smooth median strip, slightly convex ventrally, shields strongly areolated. Length of idiosoma $1,088\mu$, width 678μ .

Dorsum: Fig. 1, B. With a large oval median shield, 749μ long by 433μ wide, strongly sclerotised and areolate laterally but with a clear smooth median strip, on the margins of this strip are 7 pairs of small 24μ setae each of which is accompanied by 2-3 small round

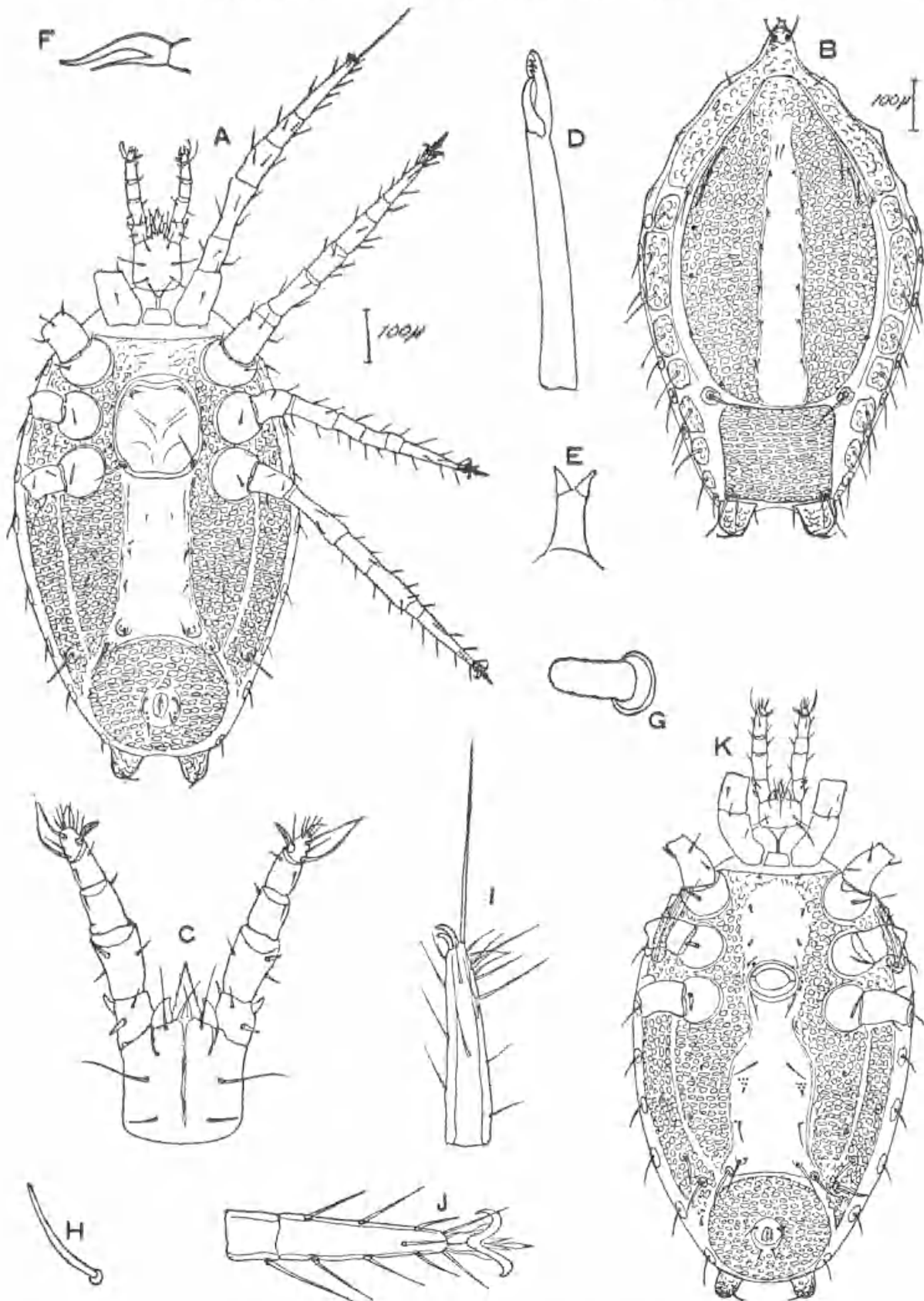


Fig. 1. A-K—*Polyaspinus tuberculatus* sp. nov. A-J—Female. A, venter; B, dorsum; C, gnathosoma ventral; D, mandible; E, tectum; F, tined seta of palpal tarsus; G, short stumpy sternal seta; H, dorsal marginal seta; I, tarsus I; J, tarsus II; K, male, venter.

pores, anteriorly on the lateral margins of the shield are four pairs of strong setae, the anterior pair 24μ long and fine, the others to 48μ long, continuing posteriorly are 4 pairs of pores or ? setal bases; there are two series of marginal setae, the inner is 8 in number on each side, generally situated singly on individual platelets although where two platelets are coalesced two setae may be present, the anterior platelets on each side are elongate and coalesced anteriorly of the dorsal shield they carry the verticle setae of 43μ length and one pair of short setae 24μ long, the setae on the other platelets are 1.2.1.1.1.1. to 96μ long; the outer series of marginal setae are 7 in number to 62μ long and on very small platelets, the anterior one on each side lacks a seta; between the posterior end of the large anterior marginal platelet and the dorsal shield is another small platelet on each side with seta 62μ long, and at the posterior end of the dorsal shield and in front of the antero-lateral angles of the posterior shield is another pair of platelets with a stronger seta to 110μ long; the posterior shield is rectangular, strongly areolated, 257μ wide by 187μ long, without setae except for a pair at each posterior corner 72μ long, the outer setae being on raised tubercles; the hysterosoma ends in two large conical characteristic prominences, 67μ long by 72μ wide, each furnished with a short curved 43μ long seta.

Venter: Fig. 1, A. Tritosternum with broad rectangular basal part exposed between coxae I and with paired laciniae; sternal shield coalesced with the endopodals, parapodals and metapodals and surrounding the perigenital rim, posteriorly of coxae IV the combined shield extends to a point midway on each side of the round ventri-anal shield, the shield is strongly areolated except for a wide slightly raised median strip extending from the posterior of the perigenital rim to the anterior margin of the ventri-anal shield and a narrow strip which runs from the posterior margin to coxae IV (fig. 2, A), sternal setae I are close to the anterior margin and accompanied by a lyriform pore, setae II are about midway between I and the apex of the genital rim, III are in line with the angles between coxae III and IV, two super-sternal setae lie close to the perigenital rim opposite coxae III, all these setae are short and stumpy (fig. 1, G) and II-III are accompanied by small round pores; the median strip expands posteriorly and carries 5 pairs of setae, the anterior pair being short and stumpy and sub-median in position, the second and third pairs are longer and spine-like and lateral on the margins of the strip, the fourth pair are short and stumpy and placed on strong tubercles, the fifth pair are at the extreme end of the postero-lateral expansions of the median strip and

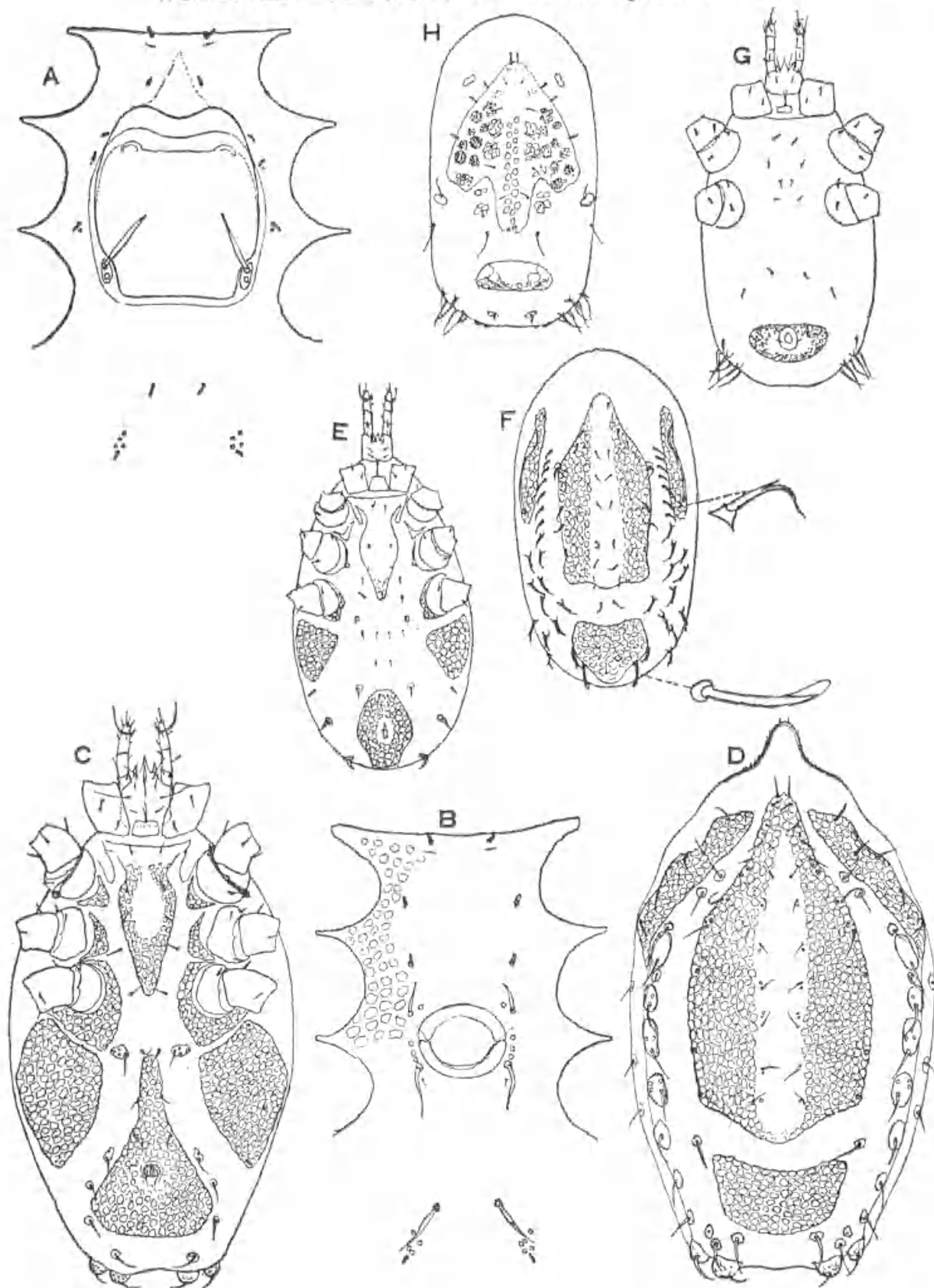


Fig. 2. A-H—*Polyaspinus tuberculatus* sp. nov. A, genital area of female, enlarged; B, same of male; C, tritonymph ventral; D, same dorsal; E, protonymph ventral; F, same dorsal; G, larva ventral; H, same dorsal.

also on strong tubercles and with a strong 96μ spine-like seta, the inner areolated portions of the shield carry two 40μ setae on each side and the outer areolated portions a stronger posterior tubercle with seta 96μ long; the ventri-anal shield is round, strongly areolate, 288μ long by 307μ wide, with the anus posterior of the mid-line and with only the two pairs of anal setae; the metasternal shields are reduced, rounded, and situated in the postero-lateral corners of the perigenital rim, they carry a strong seta 72μ long and a small round pore.

The genital shield is oval with an excavate anterior and a truncate hinged posterior margin, it overlaps the similarly shaped perigenital rim anteriorly, and is without setae, it is 192μ long by 182μ wide. The stigmata are situated opposite coxae III with short peritreme reaching to coxae II.

Gnathosoma: As figured; fig. 1, C. With four pairs of hypostomal setae in a longitudinal row, the posterior post-rostral and the rostral setae about twice as long as the capitular and anterior post-rostral setae; the labial cornicles are short and broad.

The chelicerae, fig. 1, D as figured, the moveable digit is edentate and shorter than the fixed digit, the apex of which is dentate. The palpi, fig. 1, C are 5-segmented, the first free segment with two short stout spines and the femora with an outer anterior spine, tarsus with 2-tined basal seta and long subterminal setae. The tectum is of peculiar form (fig. 1, E) with cylindrical basal part topped by two outwardly directed conical pieces.

Legs: Generally fairly slender and shorter (fig. 1, I), than the body, I 702μ long, tarsi I with a pair of small sessile claws and a long 192μ terminal seta, II 760μ long, III 643μ , IV 819μ ; tarsi II-IV (fig. I, J), with ambulaera of short caruncle, pointed pulvillus and strong paired claws.

Male allotype. General facies as in the female. Length of idiosoma $1,110\mu$, width 642μ .

Dorsum: Shields and chaetotaxy as in the female.

Venter: Fig. 1, K. Shields coalesced and areolated as in the female. Genital shield (fig. 2, B) transversely oval, 96μ wide by 82μ long, situated between coxae III and IV; sternal setae I and II and supersternal setae short and stumpy situated as in fig. 2, B; III in line with the anterior margin of genital orifice and long with accompanying pore, only one pair of supersternal stumpy setae present; metasternal setae long and tapering, in line with posterior of genital orifice, setae posterior of genital orifice as in the female but

the first two pairs longer and pointed; otherwise as in the female in all respects.

Gnathosoma: Palpi, chelicerae, and tectum as in the female.

Legs: Somewhat shorter than in the female, I 667μ long, II 702μ long, III 643μ , IV 760μ .

Larva morphotype: Fig. 2, G-H. Of oval shape. Length of idiosoma 585μ , width 328μ .

Dorsum: Fig. 2, H with a large spear-head shaped median shield 331μ by 250μ wide, not reaching nearly to the anterior of dorsum, ornamented with areolations as shown, furnished with 9 pairs of small setae including the verticles, of these the three marginal pairs are stumpy, the others pointed; on each side slightly posterior of the vertex is a small irregular platelet without setae, posterior of the lateral corners is another small platelet with a seta, in the posterior angles of the spear-head are a few areolae, in a transverse row in line with the posterior tip of the shield are four simple setae to 57μ long; posterior shield transversely oval with flattened anterior and posterior margins, 144μ wide by 48μ long and areolate only on the posterior half, without setae; posterior of this shield is a pair of sub-marginal platelets bearing a short seta while laterad of these on each side is a cluster of 5 slender tapering setae to 57μ long.

Venter: As figured (fig. 2, G), with only a posterior ventri-anal shield, podal and sternal shields absent, the sternal and metasternal shields only represented by four pairs of minute setae; ventri-anal shield reticulate, 144μ wide by 72μ long, with a straight anterior margin, and with only the anal setae, anterior of this shield is a procurved line of four short setae.

Legs: I 292μ long, II 347μ , III 347μ , all rapidly tapering.

Protonymph morphotype: Fig. 2, E-F. Of oval shape, length of idiosoma 585μ , width 328μ .

Dorsum: Fig. 2, F. With a large median shield, smaller posterior and a pair of elongate marginal shields, the median shield is 307μ long by 173μ wide, longitudinally rectangular except for the anterior third which tapers to a rounded vertex, it is areolate on the lateral thirds and smooth and slightly depressed medially, on the median strip it carries 7 pairs of short stumpy setae including the verticles, and on the lateral margins five pairs of setae; the anterior lateral marginal shields are 216μ long by 48μ wide, without setae, areolated and they carry the stigmata and peritreme; the posterior shield is pentagonal, 120μ long

by 144μ wide, areolate with a lateral marginal pair of spatulate setae to 48μ long; on the cuticle, between the median and lateral shields and posterior thereof are 19 pairs of strong setae which probably represent the marginal setae of the adults, of these 6-7 pairs lie between the marginal shields and the median, the remainder to ca 38μ long arise from small tubercles and generally are curved, tapering, with a short lateral branch.

Venter: Fig. 2, E. Sternal shield elongate, widest anteriorly to 120μ , then contracting to 29μ between coxae II, expanding to 62μ between coxae III and then tapering to a point at about midway of coxae IV, length 192μ , the anterior corners are united with the endopodal shields of coxae II to form short lobes, the shield is furnished with one pair of small setae and two pairs of pores ? or minute setae, the posterior tip is areolate; ventri-anal longer than wide, 144μ by 106μ , elongate-ovoid but slightly constricted in posterior half, areolate except for the anal region, with one pair of minute setae and the anal setae; metapodal shields free, large, triangular and reticulate, 72μ wide by 120μ long; on the cuticle between coxae IV and between the metapodal shields with 5 pairs of minute setae of which the third and fourth pairs are in a transverse row, laterad of the ventri-anal shield on each side are four stronger curved setae on tubercles.

Legs: I 292μ long, II 316μ , III 292μ , IV 351μ .

Tritonymph morphotype: Fig. 2, C-D. Ovoid in shape, with conical vertex, sides convex, posterior margin truncate with a pair of short conical processes on each side of the inner ones as in the adults. Length of idiosoma 950μ , width 526μ .

Dorsum: Fig. 2, D. With a large median shield as figured, with conical vertex, convex sides and sinuate convex posterior margin, setation and areolation as in the adults; marginal setae in two series of about 12 on each side on the individual platelets of varying size and accompanied by 1-3 pores, setae to 57μ long, outer series of 8 setae on each side to 48μ long of which the first 5 are situated on the elongate anterior marginal shields; posterior shield wider than long, 240μ by 120μ , with concave anterior margin and convex posterior margin, areolate, without setae; a pair of setae 57μ long, on small platelets in front of the anterior corners of the posterior shield.

Venter: Fig. 2, C. Sternal shield of the same shape as in the protonymph, with more extensive areolation, 192μ wide anteriorly contracting to 82μ between coxae II and then expanding to 106μ before

tapering to a point midway of coxae IV, with 3 pairs of simple setae; endopodal shields well developed and areolate; metapodal shields large, triangular, 312μ long by 178μ wide, areolate; ventri-anal shield shaped like a conical flask with neck about one third of its height, areolate, with two pairs of setae anterior of the anal region, which is slightly posterior of the mid-length of the shield; between the sternal shield and coxae III and IV are two pairs of setae; just anterior of the tip of the ventri-anal shield is a transverse row of 4 setae of which the outer members are on small platelets; laterad of the posterior half of the ventri-anal shield are three pairs of strong setae, each on small platelets and posterior of the shield is another similar pair.

Legs: I 560μ long, II 562μ , III 585μ , IV 595μ .

Remarks. While it is doubtful whether the form described here as the tritonymph is really that stage or the deutonymph, the development of the marginal shields suggests the tritonymph. No other stage has been seen.

From the other known species of the genus, *tuberculatus* can be readily distinguished by the posterior tubercular processes in both the adult stages. It is also a somewhat larger species than either *cylindricus* or *higginsii*.

To Dr. E. H. Derrick of the Queensland Institute for Medical Research the writer expresses his sincere thanks for the collection of many leaf-litter samples from which much interesting material such as the above is being obtained.

REFERENCES

- Berlese, A., 1917: Centuria seconda di acari nuovi, Redia, 12: 131.
Camin, J. H., 1953: A revision of the cohort Trachytina Trägårdh, 1938 with the description of *Dyscritaspis whartoni*, a new genus and species of Polyaspid mite from Tree Holes. Bull. Chicago Acad. Sci. 9 (17): 362-367.
——— 1954: A New Species of Uropodine Mite, *Polyaspinus higginsii* (Mesostigmata; Trachytoidea; Trachytidae). Bull. Chicago Acad. Sci. 10 (2): 15-41.
Trägårdh, I., 1941: Further contributions towards the comparative morphology of the Mesostigmata, III On the Polyaspidae Berl. Zool. Bidrag Frau Uppsala, 20: 345-357.